

CLAIMS:

1. Method for reading information from an optical disc (2), the information being stored according to pit edge recording in pits (10, 20) having nominal pit centres (12) arranged according to a substantially hexagonal pattern, the pit centres (12) defining substantially circular centre lines (13, 23) of tracks (11, 21), the method comprising the steps of:
- 5 generating at least one light beam (32);
focussing the light beam (32) in at least one focal spot (F; F1, F2) on an information layer of the optical disc (2);
controlling the radial position of the optical centre (42; 46) of the focal spot (F; F1, F2) to
10 follow a trajectory (45; 47) located between the two centre lines (13, 23) of two adjacent tracks (11; 21), the focal spot (F; F1, F2) having a size such as to cover pits (10; 20) of said two adjacent tracks (11; 21);
wherein the radial distance between said trajectory (45; 47) and a first one (13) of said two centre lines (13, 23) differs from the radial distance between said trajectory (45; 47) and the
15 second one (23) of said two centre lines (13, 23).
2. Method according to claim 1, wherein said trajectory (45; 47) has a radial spot trajectory offset (RSTO; RSTO1, RSTO2) with respect to a halfway line (44) at a position exactly halfway between said two centre lines (13, 23),
20 the radial spot trajectory offset (RSTO; RSTO1, RSTO2) being approximately equal to $0.1 \cdot TP$,
TP being the radial distance between said two centre lines (13, 23).
3. Method according to claim 1, further comprising the steps of:
- 25 detecting light (32d) reflected from the disc (2);
processing a detector output signal (S_R ; SR1, SR2) which represents the reflected light in order to decode the detector output signal (S_R ; SR1, SR2) in order to obtain the information present in said signals.

4. Method according to claim 3, wherein a detector output signal (S_R ; $SR2$) is sampled at a first sampling phase (61i) when the optical centre (42; 46) of the focal spot (F; F2) is radially aligned with a pit centre (12) of a first track (11), and wherein a detector output signal (S_R ; $SR1$) is sampled at a second sampling phase (62i) when the optical centre (42; 42) of the focal spot (F; F1) is radially aligned with a pit centre (12) of a second track (21);

wherein, at said first sampling phase (61i), the radial distance between the optical centre (42; 46) of the focal spot (F; F2) and said first track (11) is larger than $0.5 \cdot TP$; and wherein, at said second sampling phase (62i), the radial distance between the optical centre (42; 42) of the focal spot (F; F1) and said second track (21) is larger than $0.5 \cdot TP$; TP being the radial distance between said two centre lines (13, 23).

5. Method according to claim 4, wherein the disc (2) is scanned with only one optical spot (F), wherein, for sampling at the first sampling phases (61i), the radial position of the optical centre (42) of the focal spot (F) is controlled to follow a trajectory (47) closer to said second track (21) during at least one disc revolution, and wherein, for sampling at the second sampling phases (62i), the radial position of the optical centre (42) of the focal spot (F) is controlled to follow a trajectory (46) closer to said first track (11) during at least one disc revolution.

20

6. Method according to claim 5, further comprising the steps of:
obtaining signal samples from the first sampling phases (61i) during one disc revolution;
storing said signal samples from the first sampling phases (61i);
obtaining signal samples from the second sampling phases (62i) during one disc revolution;
multiplexing said signal samples from the first sampling phases (61i) and said signal samples from the second sampling phases (62i);
processing together the multiplexed signal samples from the first and second sampling phases.

7. Method according to claim 4, wherein the disc (2) is scanned with at least two optical spots (F1, F2), wherein the radial position of the optical centre (42) of a first focal spot (F1) is controlled to follow a first trajectory (45) closer to said first track (11), and wherein the radial position of the optical centre (46) of a second focal spot (F2) is controlled to follow a second trajectory (47) closer to said second track (21);

30

wherein, for sampling at the first sampling phases (61i), a read signal (SR2) obtained from said second focal spot (F2) is sampled, and wherein, for sampling at the second sampling phases (62i), a read signal (SR1) obtained from said first focal spot (F1) is sampled.

5 8. Method according to claim 7, wherein the read signal (SR2) of at least one of said focal spots (F2) is buffered or delayed with respect to the other read signal (SR1).

9. Method according to claim 7, wherein said two focal spots (F1, F2) are generated by splitting a single laser beam using a splitting device such as for instance a
10 diffraction grating.

10. Disc drive apparatus (1), for reading information from an optical disc (2), the information being stored according to pit edge recording in pits (10, 20) having nominal pit centres (12) arranged according to a substantially hexagonal pattern, the pit centres (12)
15 defining substantially circular centre lines (13, 23) of tracks (11, 21), the apparatus being designed to perform the method of claim 1.

11. Disc drive apparatus according to claim 10, comprising:
an optical system (30) for generating two focal spots (F1, F2) for scanning tracks (11, 21) of
20 the disc (2);
an actuator (52) for controlling the positioning of the two focal spots (F1, F2);
a controller (90) for controlling the actuator (52);
wherein the controller (90) is designed to control the actuator (52) such that the optical centre (42) of a first focal spot (F1) follows a first trajectory (45) between the two centre lines (13, 23) of adjacent tracks (11; 21), the first trajectory (45) being closer to a first one (11) of said
25 tracks (11, 21) while the optical centre (46) of a second focal spot (F2) follows a second trajectory (47) between said two centre lines (13, 23), the second trajectory (47) being closer to the other one (21) of said tracks (11, 21).

30 12. Disc drive apparatus according to claim 11, further comprising:
a first optical detector (135) for receiving reflected light from said first focal spot (F1), and for generating a first read signal (SR1);
a second optical detector (235) for receiving reflected light from said second focal spot (F2), and for generating a second read signal (SR2);

delay means (236) for delaying the second read signal (SR2) with respect to the first read signal (SR1);
processing means (190) for processing the first read signal (SR1) together with the delayed second read signal (SR2).

5

13. Disc drive apparatus according to claim 11, wherein said optical system (30) comprises a laser source generating a common laser beam, and a beam splitting device such as for instance a diffraction grating arranged for splitting the common laser beam in at least two separate beams.

10

14. Disc drive apparatus according to claim 13, wherein said beam splitting device is adjustable for adjusting the positioning of the two focal spots (F1, F2).

15. Disc drive apparatus according to claim 11, wherein the radial offset (RSTO1) between said first trajectory (45) and a halfway line (44) at a position exactly halfway between the said two adjacent tracks (11; 21) is smaller than $TP/2$, TP being the radial distance between said two centre lines (13, 23);
and wherein the radial offset (RSTO2) between said second trajectory (47) and said halfway line (44) is smaller than $TP/2$;
20 said offsets preferably being approximately equal to $0.1 \cdot TP$.